



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,451	09/29/2005	Tatsuo Nishita	033082R235	9723
441	7590	03/20/2006	EXAMINER	
SMITH, GAMBRELL & RUSSELL, LLP 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036			AHMADI, MOHSEN	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H/A

<b>Office Action Summary</b>	<b>Application No.</b> 10/519,451	<b>Applicant(s)</b> NISHITA ET AL.	
	<b>Examiner</b> Mohsen Ahmadi	<b>Art Unit</b> 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/29/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### **DETAILED ACTION**

The application number 10/519451 for a "Method of Oxidizing Member to be Treated" filed July 05, 2002 has been examined.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1, 2, 3, 5 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Shoichi et al. (EP Pat. 1 152 461).**

**Regarding claim 1**, Shoichi et al. discloses a method for oxidation of a surface of an object to be process, method characterized by performing oxidation wherein an active hydroxyl species and active oxygen species are mainly used in a vacuum atmosphere, a processing pressure is determined to be 133 Pa or below, and a processing temperature is determined to be 400 degree C or above (See page. 3 paragraphs [0013-0022-24]).

Art Unit: 2812

**Regarding claim 2**, Shoichi et al. discloses a method for oxidation of an object to be processed, characterized by feeding an oxidizing gas and a reducing gas into processing container respectively by separate gas supply systems in order to produce active oxygen species and active hydroxyl species (See page. 3 paragraphs [0014-0015]).

**Regarding claim 3**, Shoichi et al. discloses a method for oxidation of an object to be processed, characterized in that: oxidizing gas includes one or more gasses selected from a group of O<sub>2</sub>, N<sub>2</sub>O, NO, reducing gas is H<sub>2</sub>, and H<sub>2</sub> concentration inside processing container is 40% or below (See pages. 3 and 7 paragraphs [0020 and 0064]).

**Regarding claim 5**, Shoichi et al. discloses a method for oxidation of an object to be processed, characterized in that H<sub>2</sub> concentration is within the range from 5 to 33% (See page. 7 paragraph [0070]).

**Regarding claim 6**, Shoichi et al. discloses a method for oxidation of an object to be processed, characterized in that processing temperature is within the range from 800 to 1,000 degree C (See page. 3 paragraph [0024]).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2812

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 4, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoichi et al. (EP Pat. 1 152 461) in view of Miner et al. (US Pat. 6,114,258).**

**Regarding claim 4,** Shoichi et al. is relied upon as discussed above.

Shoichi et al. discloses all of the claimed features as stated above except for a nitride film and silicon, which are both exposed on surface of object to be processed.

Miner et al. discloses a method of oxidizing a substrate in the presence of nitride and oxynitride films.

Figure. 2 of Miner et al. discloses a method for oxidation of an object to be processed, characterizing a nitride film and silicon, which are both exposed on surface of object to be processed (See col. 4 lines 27-49).

It would have been obvious to one of ordinary skill in the art, at the time of invention, to use the oxidation process of Shoichi et al. in the process of Miner et al. for its known benefit of oxidizing nitride film and silicon.

**Regarding claim 7,** Shoichi et al. discloses all of the claimed features as stated above except for a method of oxidation an object to be processed, characterized in that, prior to an oxidation processing, nitride film is formed to

Art Unit: 2812

have an extra thickness corresponding to a thickness of the surface of nitride film to be oxidized.

Miner et al. discloses a method of oxidation an object to be processed, characterized in that, prior to an oxidation processing, nitride film is formed (See col. 4 lines 27-30).

However, Miner et al. did not disclose an extra thickness corresponding to a thickness of the surface of nitride film to be oxidized.

It would have been obvious to one of ordinary skill in the art, to optimize the thickness. The determination of the thickness is a matter of optimization. See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

**Regarding claim 8**, Shoichi et al. discloses all of the claimed features as stated above except for a method of oxidation an object to be processed, characterized in that, nitride film is a silicon nitride film (SiN).

Miner et al. discloses a method of oxidation an object to be processed, characterizing where the nitride film is a silicon nitride film (SiN) (See col. 4, lines 34-36).


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohsen Ahmadi whose telephone number is 1-571-272-5062. The examiner can normally be reached on Mon-Fri 8:00am-5:00pm.

Art Unit: 2812

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 1-571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MA   
03/08/2006

  
MICHAEL LEBENTRITT  
SUPERVISORY PATENT EXAMINER